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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/910,537	07/20/2001	Jason S. Reid	P21-US	2129

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EXAMINER
DUONG, KHANH B

ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 04/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/910,537	Applicant(s) REID, JASON S.	
	Examiner Khanh Duong	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 July 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-70* is/are pending in the application.

4a) Of the above claim(s) *27-54 and 68-70* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25 and 55-66* is/are rejected.

7)☒ Claim(s) *26 and 67* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☒ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 27-54 and 68-70, drawn to a process of making a semiconductor device, classified in class 438, subclass 52.

II. Claims 1-26 and 55-67, drawn to semiconductor device, classified in class 257, subclass 415.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the device can alternatively be made by *forming the sacrificial layer on a carrier substrate first, then transfer the sacrificial layer to the substrate.*

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

During a telephone conversation with Greg Muir on July 2, 2002, a provisional election was made *with* traverse to prosecute the invention of Group II, claims 1-26 and 55-67.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 27-54 and 68-70 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

The drawings are objected to because FIG. 1I fails to show the aperture in the structural material layer 38 as shown in Fig. 1J. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: --MICROMECHANICAL DEVICE COMPRISING TRANSITION METAL DIELECTRIC ALLOY MATERIALS-- .

The disclosure is objected to because of the following informalities: page 5, line 32, "electtrode" should be --electrode--.

Appropriate correction is required.

Claim Objections

Claims 9, 10 and 63 are objected to because of the following informalities:

Claim 9, line 1, ".1 at %" should be --0.1 %--.

Claim 10, line 2, "10 at %" should be --10 %--.

Claim 63, the claim improperly depends on non-existing claim "106".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 21, "the light beam steering device" lacks antecedent basis as depending on claim 17.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6-8, 11-25, 55-61 and 63-66 are rejected under 35 U.S.C. 102(b) as being anticipated by Yagi et al. (US 6,020,215).

Re claims 1-4, 6-8, 11-25, 55-61 and 63-66, Yagi et al. discloses a micromechanical device (see at least Figs. 4(A)-4(L) and associated text) comprising: a semiconductor substrate 1, a movable element formed on the substrate 1 and an Al hinge 3 for allowing movement of the movable element relative to the substrate 1, wherein the movable element is formed of a ceramic compound 2 selected from Groups 3A to 6A (SiN), and a compound 16 comprising of a late transition metal (Au, a noble metal) selected from Group 1B and an early transition metal (Cr). At column 8, lines 45-47, Yagi et al. discloses that the Al hinge 3 was formed from a sputtered Al layer 10. Yagi et al. further discloses the application of micromechanical devices as MEMS sensors and micromirrors at column 1, lines 25-65, wherein it is inherent that micromirrors are devices used to deflect light beams in optical switches and displays.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi et al. (US 6,020,215).

Re claim 9, Yagi et al. fails to specifically show the nitride being less than 0.1% oxygen.

Although the exact content of oxygen in the nitride layer was not specified by Yagi et al., it appears that having a specific oxygen content as claimed is prima facie obvious due to the fact that one can vary the oxygen content in order to achieve a specific stable compound. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Yagi et al. by selecting a suitable oxygen content for the nitride layer, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Claims 5 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi et al. (US 6,020,215) in view of Lal et al. (US 6,479,920).

Claims 5 and 62, Yagi et al. discloses the late transition metal being a noble metal (Au) instead of a ferromagnetic metal (Fe, Co or Ni).

Lal et al. shows in FIG. 24 that a micromechanical device that comprises a Ni (a ferromagnetic material) layer 143 formed on a SiN layer 141 is an equivalent structure known in the art (see column 12, lines 27-37). Therefore, because these two late transition metals (noble and ferromagnetic) were art recognized equivalents at the time of the invention was made, one of ordinary skill in the art would have found it obvious to substitute a ferromagnetic metal for a noble metal.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi et al. (US 6,020,215) in view of Herrmann (US 6,449,079).

Re claim 10, Yagi et al. discloses, in addition to a late transition metal, a silicon nitride compound instead of an oxynitride compound that comprises up to 10% oxygen.

Herrmann shows at column 6, lines 8-11 that, within the structure of a deflectable micromiror, a silicon oxynitride is an equivalent compound to silicon nitride (see column 12, lines 27-37). Therefore, because these two compounds were art recognized equivalents at the time of the invention was made, one of ordinary skill in the art would have found it obvious to substitute silicon oxynitride for silicon nitride.

Although the exact content of oxygen in the oxynitride layer was not specified by Herrmann, it appears that having a specific oxygen content as claimed is prima facie obvious due to the fact that one can vary the oxygen content in order to achieve a specific stable compound. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Yagi et al., in view of Herrmann, by selecting a suitable oxygen content for the oxynitride layer, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Allowable Subject Matter

Claims 26 and 67 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yagi '750 and Shiomi et al. '074 disclose teachings relevant to the instant invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Duong whose telephone number is (703) 305-1784. The examiner can normally be reached on Monday - Friday (9:00 AM - 6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian, can be reached on (703) 308-4905. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

KBD
March 20, 2003

AMIR ZARABIAN
SUPERVISORY PATENT EXAMINER
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